

**REMARKS**

Upon entry of the present amendment, the claims in the application the claims in the application are claims 1-7 and 9-26, of which claim 1 is independent, and of which claims 6, 7, 10 and 14-25 stand withdrawn from consideration as being drawn to a non-elected invention and/or a non-elected species.

Newly added claim 26 is drawn to the invention and the species as elected by applicant ~~previously in response to the restriction imposed by the Examiner, and thus should be examined~~ together with claims 1-5, 9 and 11-13 in the present application.

Claim 1 is amended above to incorporate the limitations of claim 8 (now cancelled), claim 7 is amended to be consistent with amended claim 1, and claim 13 is amended by adding the term "then" before the second and third steps to indicate a specific order in which the steps are conducted relative to the first step and to each other. New claim 26 defines a small quantity of coarse particles having particle diameters greater than the Rosin-Rammler's absolute size constant is added to said filler to establish a sharp grain size distribution of filler particles with at least two peaks.

Applicant respectfully submits that all of the above amendments are fully supported by the original disclosure including the specification, drawings and claims, and especially the discussion at pages 26-27 of the specification. Applicant also respectfully submits that no new matter is introduced by the above amendments.

**Art Based Rejections Presented in the Office Action**

1. At items 5-13 of the Office Action, the Examiner rejects claims 1-5, 8, 9 and 11-13 under the judicially created doctrine of obviousness-type double patenting based on the claims of each of US Patents 4,464,485, 4,797,425, 4,828,771 and 5,242,635 (all owned by the assignee of the present application, TOTO, LTD.) when considered individually or in view of US patent 4,783,489 to Inoue et al. It is the Examiner's position that: each of the four primary references teach all of the steps/features of claims 1-4 and claim 13 because the hardeners and fillers used in the references would develop self water absorption capability and mold releasability to some extent, and claim 13

does not require the components to be added in any particular order; US Patent 4,464,485 also teaches the relative ratio of hardener components as required by claim 8; that it would have been obvious at the time of the invention to modify the methods of each of the primary references to include aluminum hydroxide as the filler material, to include particle sizes ranging from 1-20  $\mu\text{m}$ , and to additionally include a dilatancy reducing agent based on the teachings of Inoue; and to select the claimed grain size distribution based on routine experimentation. The Examiner indicates that these rejections may be overcome by the filing of an appropriate terminal disclaimer.

#### Applicant's Response

Upon careful consideration and in light of the above amendments to claims 1 and 13, applicant respectfully submits that such obviousness-type double patenting rejections are overcome and that each of the rejected claims is clearly patentably distinct over the applied references (whether considered singly or in combination), because none of the references teach the required particle sizes of the filler, such filler particle sizes in combination with a particular hardener, the grain size distribution or the order of mixing steps as defined in the present claims, and which are *critical* to achieving significant advantages according to the invention, e.g., improved self water-absorbent ability and releasability of the open porous body and prevention-reduction of dilatancy in the an emulsion slurry without use of a dilatancy reducing agent.

Relative to the particle sizes now defined in claim 1 (formerly in claim 8) and claim 5, applicant respectfully submits that such particle sizes are not disclosed by or obvious in view of the references of record. For example, Inoue teaches specific use of filler particle sizes that are much larger than the claimed ranges, e.g., only down to 300 mesh which corresponds to approximately 45-50 microns. On the other hand, while Inoue may generally refer to particle sizes which are "smaller than 300 mesh", such general reference does not make obvious the *specific limited ranges* as claimed which are *critical* to achieving important advantages according to the invention as

disclosed in the specification, e.g., at pages 20-48. Inoue's general reference to particle sizes smaller than 300 mesh is hardly specific, contrary to the particle size ranges defined in the present claims. On the other hand, US Patent 4,464,485 merely teaches that the criteria for selecting the particle size of the filler used is simply one that is "easy to handle" ( $5\mu > 30\%$ ). Clearly, this is not a situation involving a mere optimization of a result-effective variable in that the references do not address or appreciate the significance of the limited filler particle size range in achieving an appropriate self water-absorbing capability.

In relation to the hardener as now defined in claim 1, although US Patent 4,464,485 teaches use of a hardener which is a mixture primarily composed of a product produced by a reaction between monomer fatty acid and chain-like fatty primary polyamine and a product produced by a reaction between polymer fatty acid and chain-like fatty primary polyamine, this patent specifies a component mixture which is *substantially opposite* to that now defined in claim 1.

Particularly, the mixture of US Patent 4,464,485 includes (preferably) 5-95 % of the product produced by a reaction between monomer fatty acid and chain-like fatty primary polyamine, whereas claim 1 defines that the hardener includes 1-5 wt % of a product produced by a reaction between monomer fatty acid and chain-like fatty primary polyamine because the applicant has determined that use of a quantity of such product above 5 wt % would result in an open porous body with which "insufficient capillary attractive forces would be developed under industrial casting conditions" as discussed in the present specification. Further, US Patent 4,464,485 discloses that if the amount of this component is reduced below 5%, a difficulty is encountered in producing a porous product having a mean pore size not smaller than 1.5microns, and that the lowest used amount (5%) of the product produced by a reaction between monomer fatty acid and chain-like fatty primary polyamine is only selected when producing open pores having a very

small pore diameter of 0.5 micron. Thus, US Patent 4,464,485 actually teaches away from the claimed particle size ranges and ratio of hardener components.

Regarding claim 11, applicant respectfully submits that none of the applied references discloses or in any way suggests selection of a grain size distribution as claimed, nor is this feature an obvious matter of routine experimentation as alleged by the Examiner given the important advantages achieved by this feature (e.g., increasing the ability of the porous mold to pass a fluid without substantially affecting the deposition rate, slightly suppressing the occurrence of a dilatancy phenomenon, etc. as disclosed). Again, applicant respectfully submits that this is not a situation involving a mere optimization of a result-effective variable conventionally recognized in the art because the references do not address or appreciate the significance of the sharp grain size distribution of fine filler particles in achieving an appropriate self water-absorbing capability. In other words, there is no reason /motivation from the teachings of the references for performing experimentation to somehow achieve the claimed feature. This distinction is further emphasized by the new claim 26.

Regarding claim 13, applicant respectfully submits that from amendments above it is clear that the claim specifies a particular order in which the method steps are carried out. Moreover, the claimed method is not disclosed or suggested by the applied references, and achieves an important advantage in the art, i.e., reduction-prevention of the dilatancy phenomenon without use of a dilatancy reducing agent.

Based on the foregoing, applicant respectfully submits that the rejections of claims 1-5, 8, 9 and 11-13 under the judicially created doctrine of obviousness-type double patenting based on the claims of each of US Patents 4,464,485, 4,797,425, 4,828,771 and 5,242,635 when considered individually or in view of US patent 4,783,489 to Inoue et al. is overcome, and accordingly it is respectfully requested that these rejections be reconsidered and withdrawn.

2. At item 14 of the Office Action, the Examiner alleges that claims 1-5, 8, 9 and 11-13 are not

patentably distinct from the claims US Patents 4,464,485, 4,797,425, 4,828,771 and 5,242,635 when considered individually or in view of US patent 4,783,489 to Inoue et al., and further indicates that an interference between the present application and one or more of US Patents 4,464,485, 4,797,425, 4,828,771 and 5,242,635 might be declared if the conflicting inventions were not commonly owned at the time the invention claimed in the present application was made. Further the Examiner requires applicant to either show that the conflicting inventions were commonly owned at the time the invention claimed in the present application was made or to name the prior inventor of the conflicting subject matter, or to face abandonment of the present application, pursuant to 35 USC 103(c) and 37 CFR 1.78(c).

Applicant's Response

In response to the requirement imposed by the Examiner, applicant encloses herewith a Declaration of Kazuhiro Kitagawa, General Manager of TOTO, LTD., attesting to the fact that TOTO, LTD. owns the present application and each of US Patents 4,464,485, 4,797,425, 4,828,771 and 5,242,635, and that the inventions of the present application and US Patents 4,464,485, 4,797,425, 4,828,771 and 5,242,635 were commonly owned at the time the invention of the present application was made. Accordingly, applicant respectfully submits that it has fully complied with the requirement imposed by the Examiner.

3. At item 16 of the Office Action, the Examiner rejects claims 1-4, 12 and 13 under 35 USC 103(a) as being unpatentable over each of US Patents 4,464,485, 4,797,425, 4,828,771 and 5,242,635; at item 1 of the Office Action, the Examiner rejects claims 5, 9 and 11 under 35 USC 103(a) as being unpatentable over each of such patents when considered in view of US Patent 4,783,489 to Inoue et al.; and at item 18 of the Office Action, the Examiner rejects claim 8 under 35 USC 103(a) as being unpatentable over US Patent 4,464,485 in view of US Patent 4,783,489 to

Inoue et al.

Applicant's Response

Upon careful consideration and in light of the above amendments to claims 1 and 13, applicant respectfully submits that such rejections are overcome and that each of the rejected claims is clearly patentably distinct over the applied references (whether considered singly or in combination), for the same reasons as discussed above in relation to the obviousness type double patenting rejections based on the same references. Accordingly, it is respectfully requested that such rejections be reconsidered and withdrawn.

4. At item of the Office Action, the Examiner rejects claims 1-5, 9 and 11-13 under 35 USC 103(s) as being unpatentable over US patent 4,783,489 to Inoue et al..

Applicant's Response

Upon careful consideration and in light of the above amendments to claims 1 and 13, applicant respectfully submits that such rejection is overcome and that each of the rejected claims is clearly patentably distinct over the Inoue reference. Accordingly, it is respectfully requested that such rejection be reconsidered and withdrawn.

Other References Cited in the Office Action

The additional reference cited by the Examiner at item 20 of the Office Action (Bredow et al. US Patent 5,017,632) has been considered by applicant, but it is respectfully submitted that this additional reference fails to overcome the deficiencies of the applied references as discussed above relative to the presently claimed invention.

New Claim

New claim 26 is believed to be allowable over the references of record based on the foregoing arguments concerning claim 1, and on the merits of the additional feature presented in this claim.

Conclusion

In conclusion, applicant has overcome the Examiner's rejections as presented in the

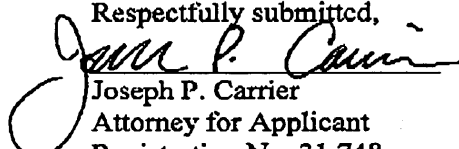
Office Action; and moreover, applicant has considered all of the references of record, and it is respectfully submitted that the invention as defined by each of the present claims is clearly patentably distinct thereover.

The application is now believed to be in condition for allowance, and a notice to this effect is earnestly solicited.

If the Examiner is not fully convinced of all of the claims now in the application, applicant respectfully requests that the Examiner telephonically contact applicant's undersigned representative to expeditiously resolve prosecution of the application.

Favorable reconsideration is respectfully requested.

Customer No. 21828  
Carrier, Blackman & Associates, P.C.  
24101 Novi Rd, Ste. 100  
Novi, Michigan 48375  
October 28, 2004

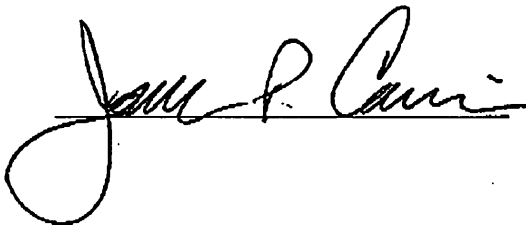
Respectfully submitted,  
  
Joseph P. Carrier  
Attorney for Applicant  
Registration No. 31,748  
(248) 344-4422

Dated: October 28, 2004

**CERTIFICATE OF FACSIMILE TRANSMISSION**

I hereby certify that this correspondence is being transmitted, via facsimile, to Examining Group 1732 of the United States Patent and Trademark Office on October 28, 2004, at the number (703) 872-9306.

JPC/ms



**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☒ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**